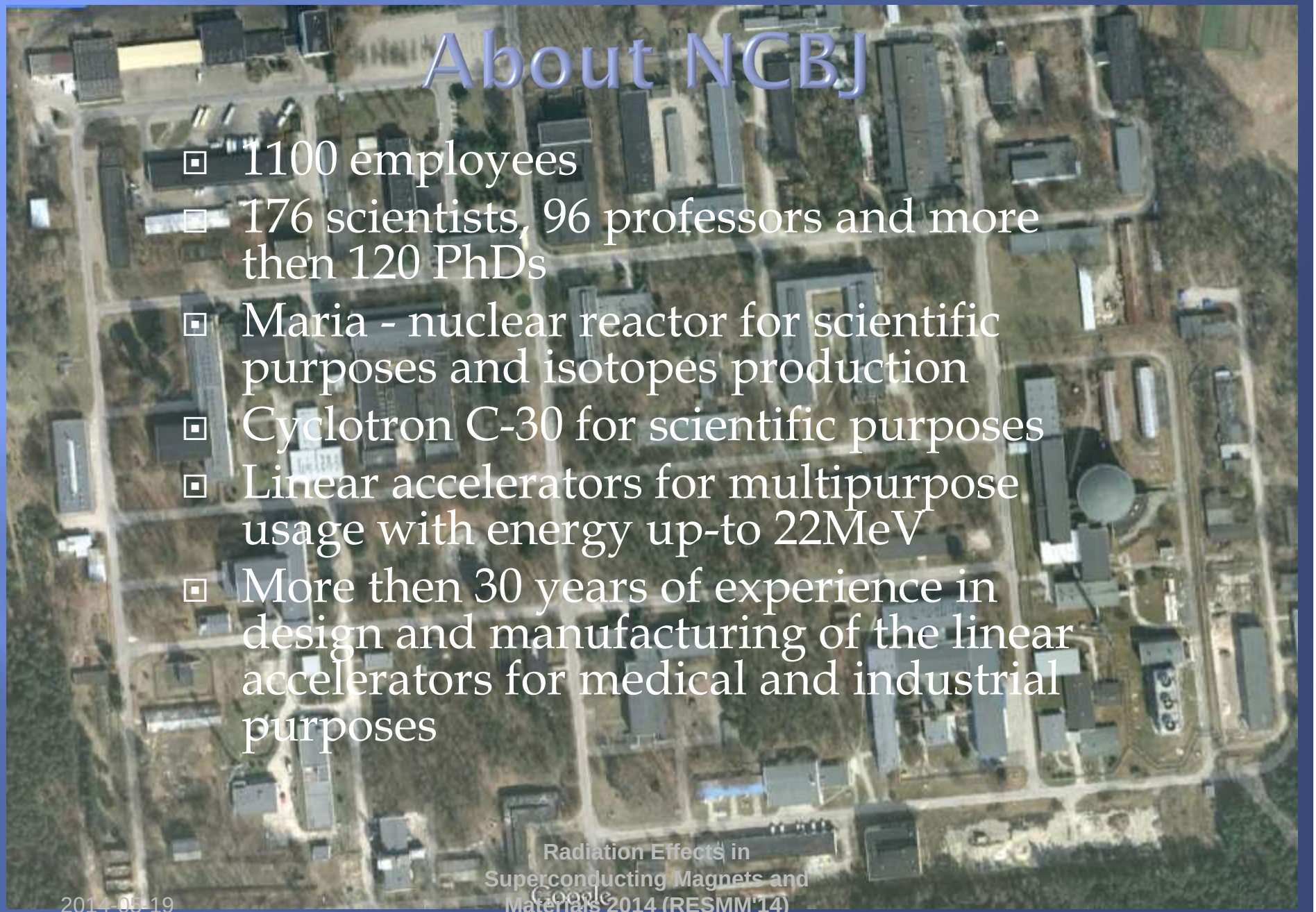
HIGH DOSES RADIATION FACILITY AT NCBJ

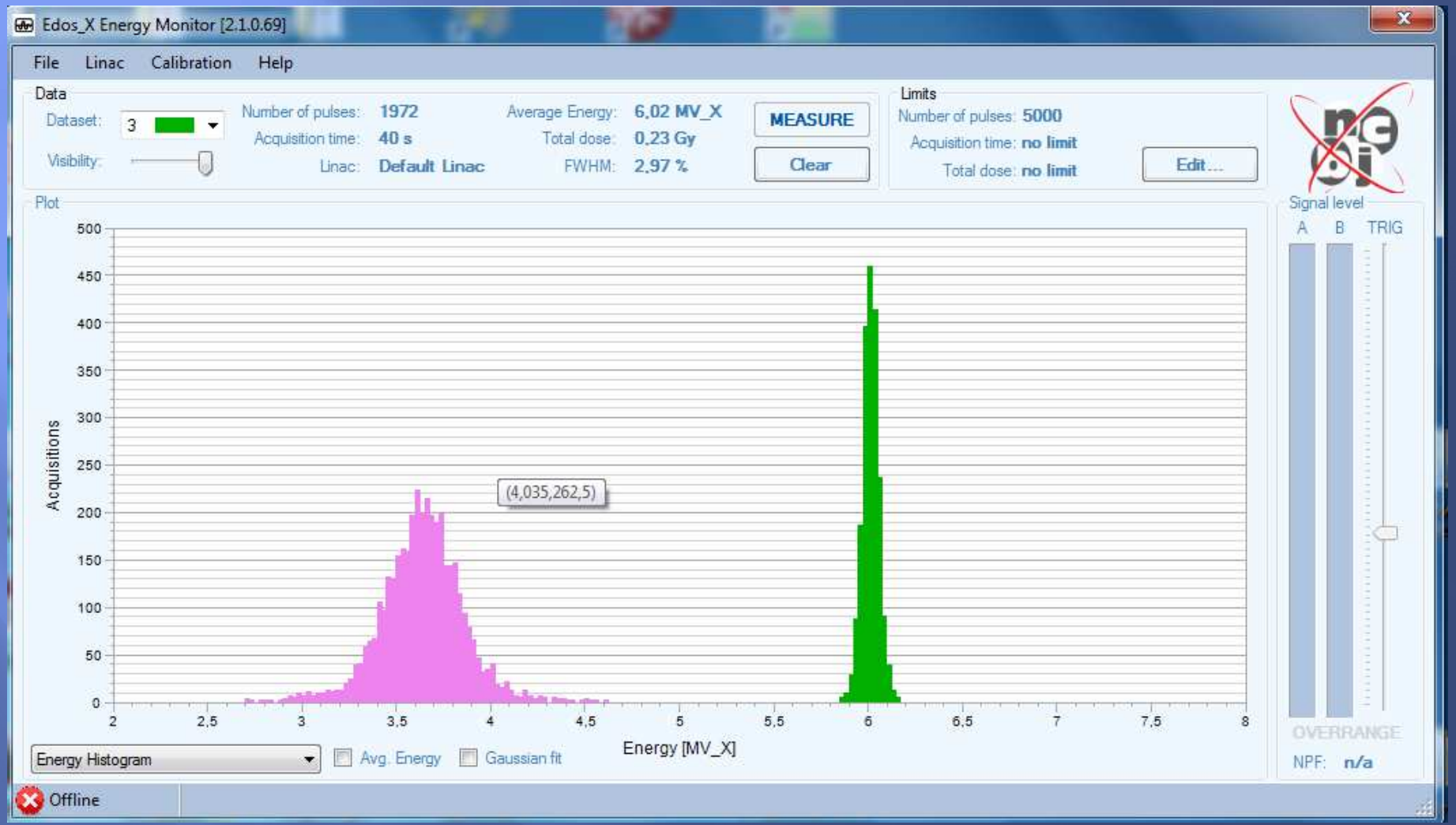
14.05.2014r

About NCBJ



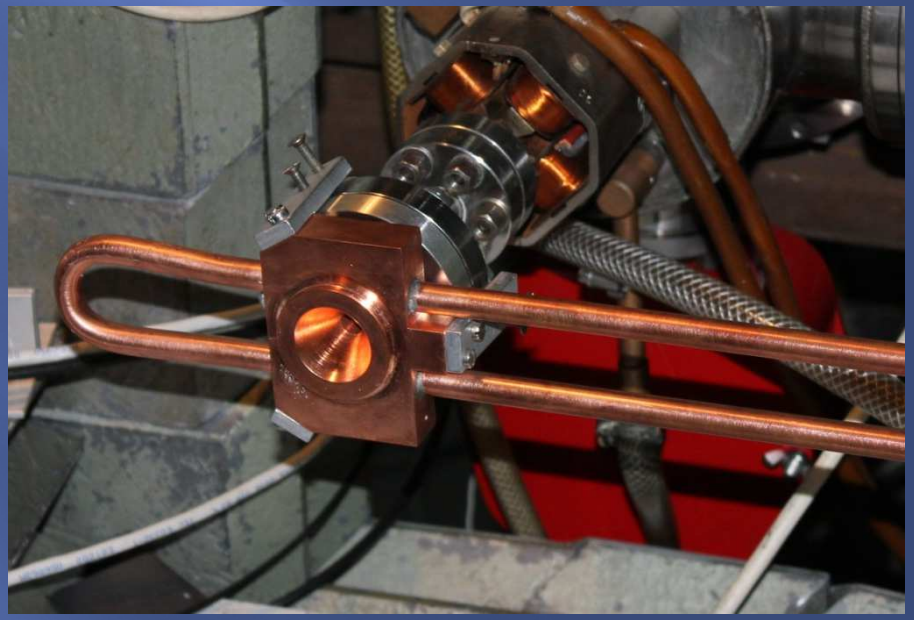
- 1100 employees
- 176 scientists, 96 professors and more then 120 PhDs
- Maria - nuclear reactor for scientific purposes and isotopes production
- Cyclotron C-30 for scientific purposes
- Linear accelerators for multipurpose usage with energy up-to 22MeV
- More then 30 years of experience in design and manufacturing of the linear accelerators for medical and industrial purposes

Introduction



System setup

- Source: biperiodical accelerating structure with removable conversion plate
- Microwave source: Thales klystron TH 2157A supplied by Scandinowa K1 modulator

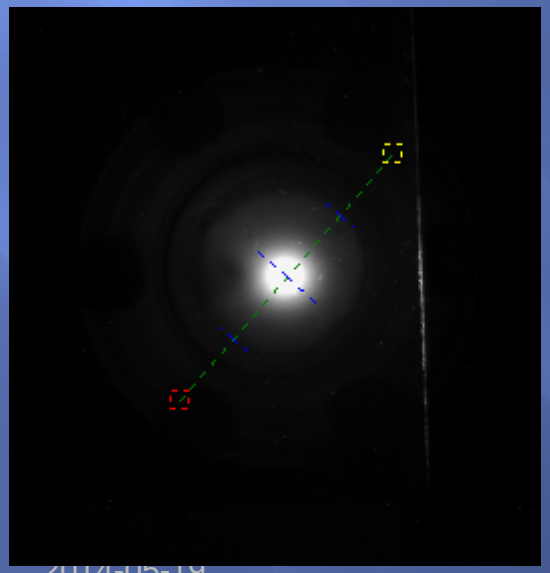


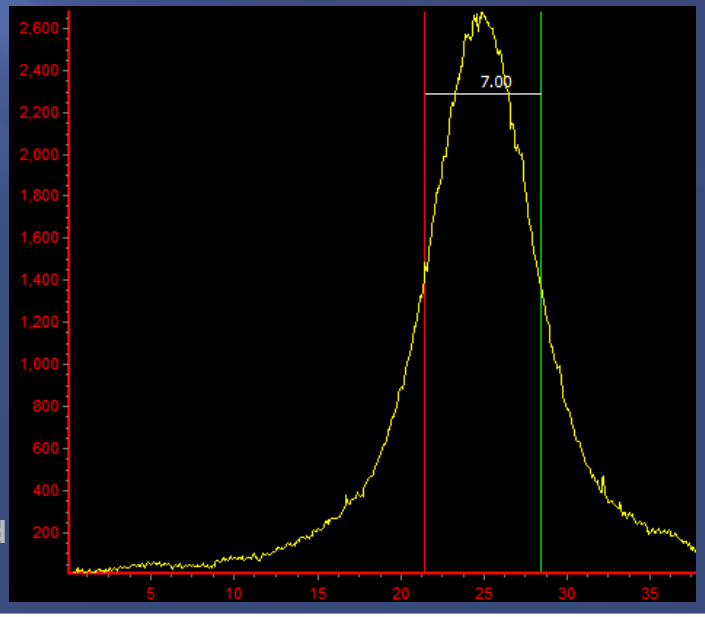
System setup…

- Sa
  b
  c
  th

First samples

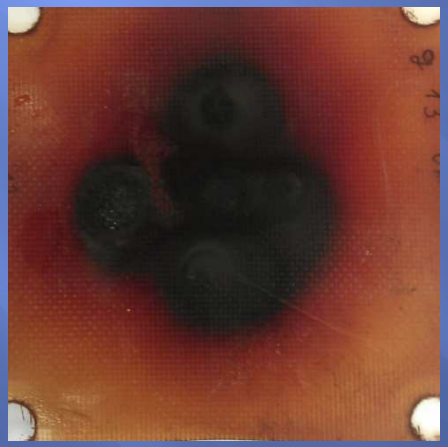
- Dimension of source: 7mm at 3cm distance.
- System tuned to work with 24kGy/min – all samples burned !
- Conclusion: reduce a doserate to 10kGy/min, samples cooled directly by liquid nitrogen

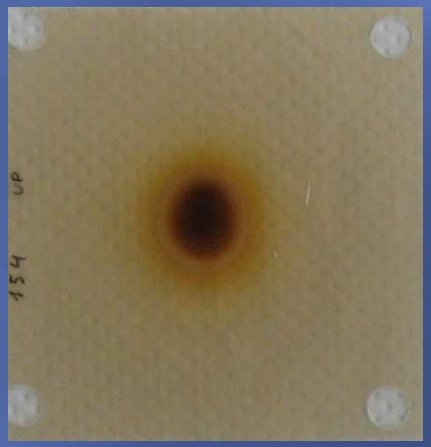


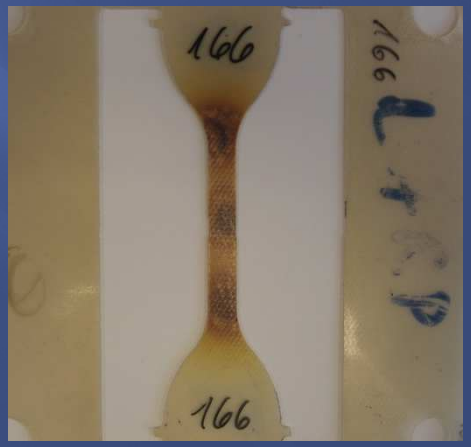


Irradiation in series

- Samples for thermal tests
- Samples for electric isolation quality tests
- Samples for mechanical strength tests







Irradiation in series

- First package of samples: 5 points 38,4 MGy per point (dose rate 24 kGy/min)
- Second package: 1 point 50 MGy at point (dose rate 22kGy/min)
- Third package of samples: 1 point 50 MGy at point (dose rate 10kGy/min)
- Fourth package of samples: 1 point 50 MGy at point (dose rate 10kGy/min)
- Fifth package of samples: 3 points 38,7 MGy at cental point, 41,8 other points (dose rate 10kGy/min)
- Sixth package of samples: 3 points 38,7 MGy at central point, 41,8 other points (dose rate 10kGy/min)

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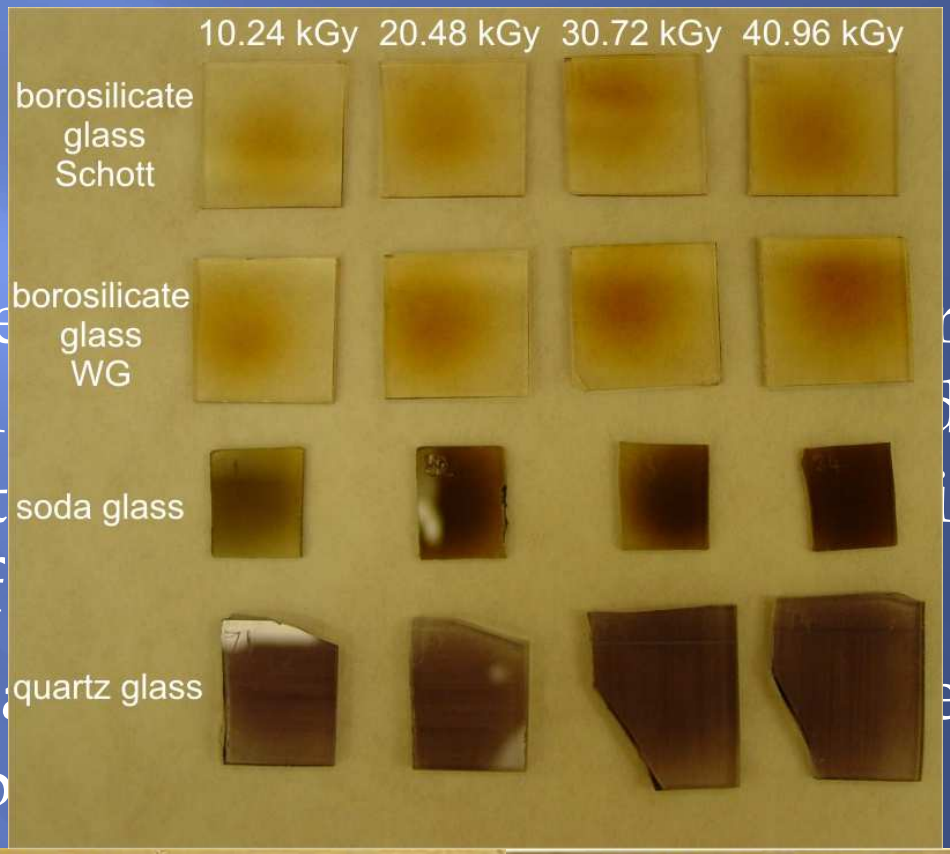
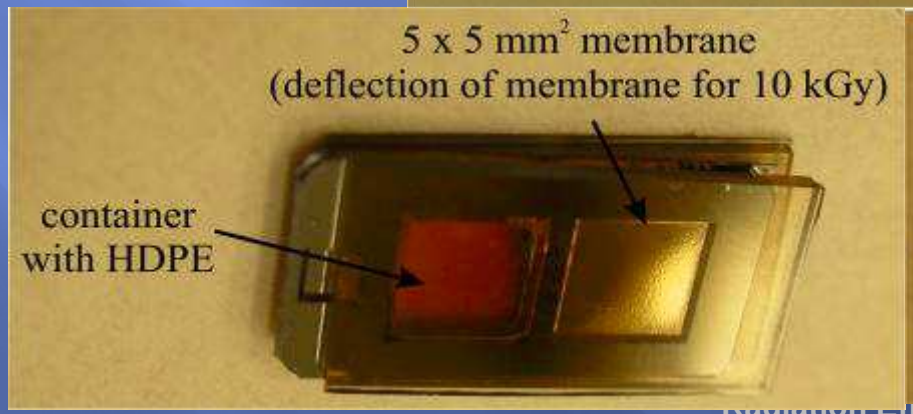
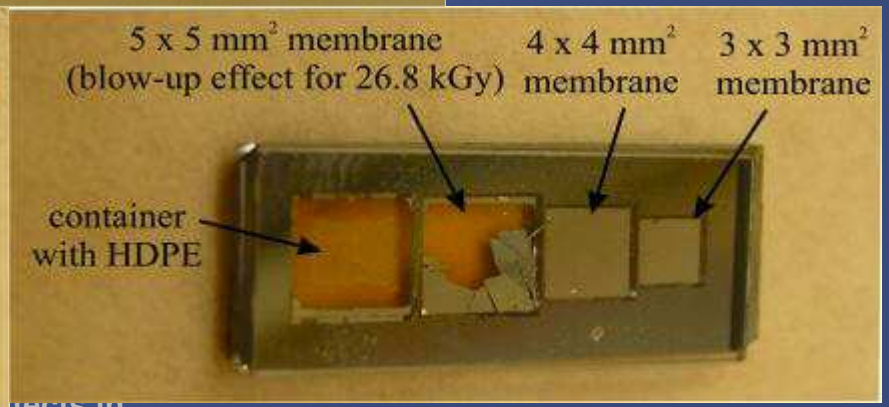
- Modific each the new typ







Plans for a future

- Upgrade the facility and replace accelerating structure with a new 15MV structure equipped with the X-ray conversion plate, with dose rate more then 10kGy/min
- Rebuild a power supply system to increase PRF up to 300Hz
- Install the new temperature stabilizing system based on GWK temeprature controller

Thank you for your attention